

In the claims.

1. An ink recordable substrate coating composition having a pH less than 7 comprising:

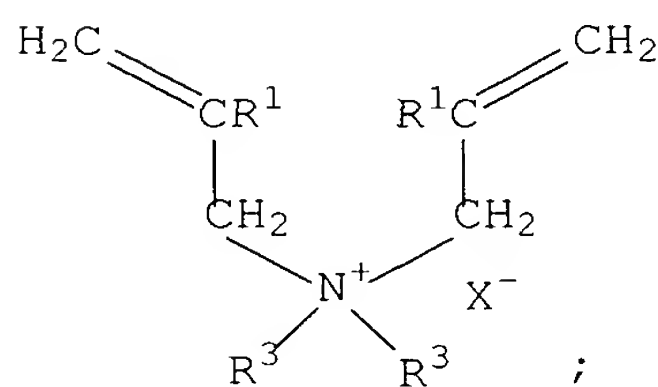
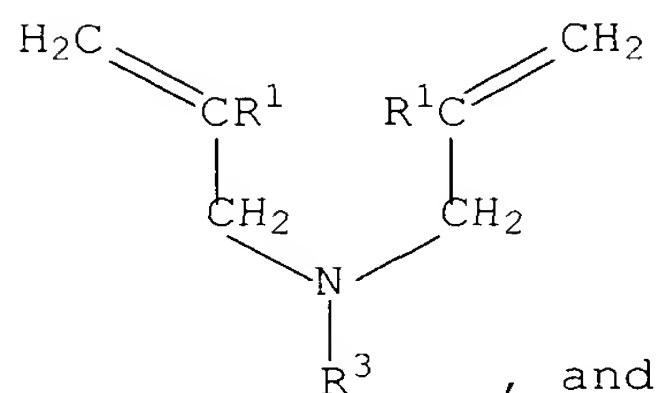
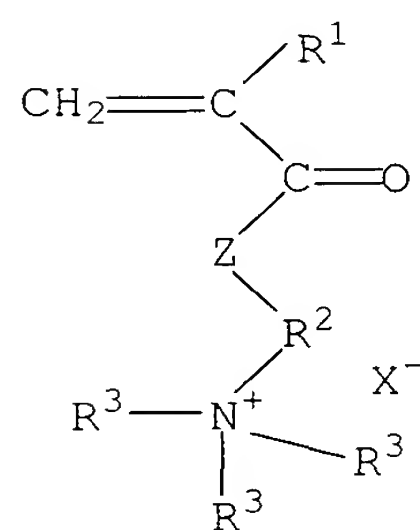
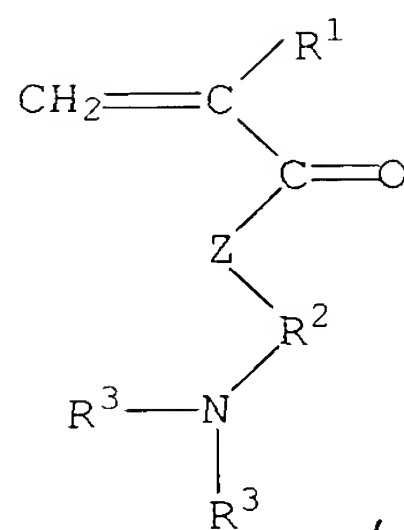
- 5 (a) an aqueous polyurethane dispersion; and
 (b) an aqueous solution of a nitrogen containing polymeric dye fixative compound.

2. The ink recordable substrate coating composition of
10 claim 1 wherein the polyurethane is selected from the group consisting of anionic polyurethanes, cationic polyurethanes, nonionic polyurethanes and mixtures thereof.

3. The ink recordable substrate coating composition of
15 claim 2 wherein the aqueous anionic polyurethane dispersion comprises one or more anionic polyurethanes selected from the group consisting of aromatic polyether polyurethanes, aliphatic polyether polyurethanes, aromatic polyester polyurethanes, aliphatic polyester polyurethanes, aromatic
20 polycaprolactam polyurethanes, and aliphatic polycaprolactam polyurethanes.

4. The ink recordable substrate coating composition of claim 2 wherein the aqueous anionic polyurethane has one or
25 more acid groups selected from the group consisting of carboxylic acid, sulfonic acid and mixtures thereof.

5. The ink recordable substrate coating composition of claim 1 wherein the aqueous solution of a nitrogen containing
30 polymeric dye fixative compound comprises a polymer comprising monomer residues derived from one or more nitrogen containing monomers selected from the group consisting of:



- 5 wherein R^1 is selected independently for each occurrence in each structure from the group consisting of H and C_1 to C_3 aliphatic; R^2 is independently for each structure a divalent linking group selected from the group consisting of C_2 to C_{20} aliphatic hydrocarbon, polyethylene glycol and polypropylene glycol; R^3 is independently for each occurrence in each
- 10 structure selected from the group consisting of H, C_1 to C_{22} aliphatic hydrocarbon and a residue from the reaction of the nitrogen with epichlorohydrin; Z is selected from the group consisting of -O- and - NR^4 -, where R^4 is selected from the

group consisting of H and CH₃; and X is selected from the group consisting of halides and methylsulfate.

6. The ink recordable substrate coating composition of
5 claim 1 wherein the aqueous polyurethane dispersion is present
at from 10 to 70 percent by weight of the ink recordable
substrate coating composition and the aqueous solution of a
nitrogen containing polymeric dye fixative compound is present
at from 30 to 90 percent by weight of the ink recordable
10 substrate coating composition.

7. The ink recordable substrate coating composition of
claim 5 wherein the nitrogen containing monomer is one or more
selected from the group consisting of dimethyl aminoethyl
15 (meth)acrylate, (meth)acryloyloxyethyl trimethyl ammonium
halides, (meth)acryloyloxyethyl trimethyl ammonium
methylsulfate, dimethyl aminopropyl (meth)acrylamide,
(meth)acrylamidopropyl trimethyl ammonium
halides, (meth)acrylamidopropyl trimethyl ammonium
20 methylsulfate, aminoalkyl (meth)acrylamides where the amine is
reacted with epichlorohydrin, diallyl amine, methyl diallyl
amine, and diallyl dimethyl ammonium halides.

8. The ink recordable substrate coating composition of
25 claim 3 wherein the anionic polyurethane is one or more
selected from the group consisting of aromatic polyether
polyurethanes, aliphatic polyether polyurethanes, aromatic
polyester polyurethanes, and aliphatic polyester
polyurethanes.

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9. The ink recordable substrate coating composition of
claim 1 wherein the total resin solids is from 1 to 35 wt.%
based on the total weight of the ink recordable substrate
coating composition.

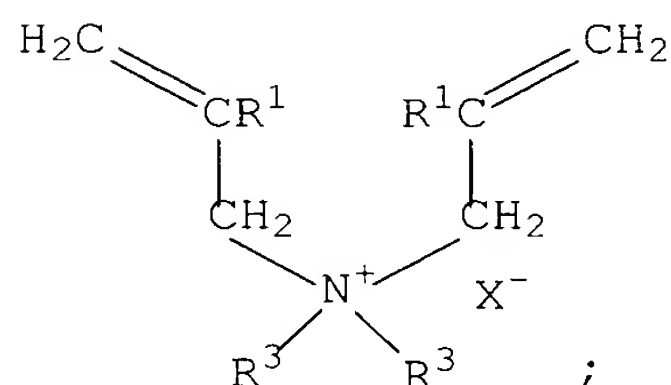
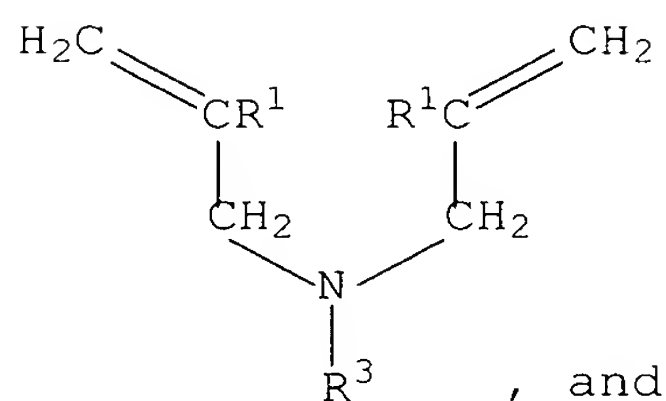
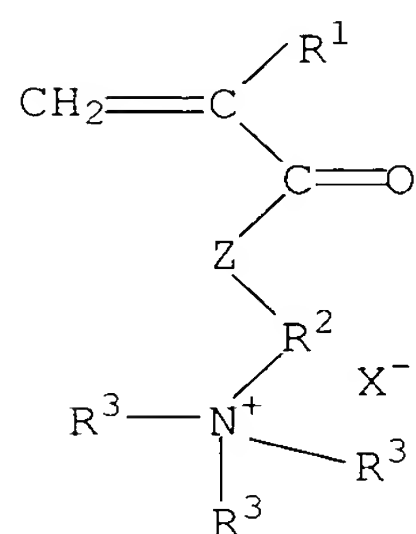
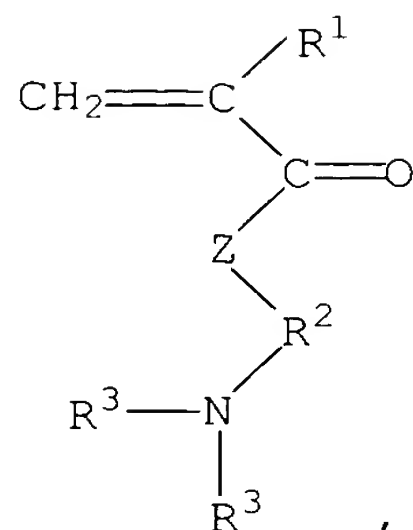
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10. The ink recordable substrate coating composition of claim 1 wherein the viscosity of the ink recordable substrate coating composition is less than 500 cps.

5 11. The ink recordable substrate coating composition of claim 1 prepared by mixing the nitrogen containing polymeric dye fixative compound (b) into the aqueous polyurethane dispersion (a).

10 12. An ink recordable substrate coating composition having a pH less than 7 formed by adding (a) an aqueous solution of a polymeric nitrogen containing dye fixative compound to (b) an aqueous anionic polyurethane dispersion comprising one or more anionic polyurethanes selected from the
15 group consisting of aromatic polyether polyurethanes, aliphatic polyether polyurethanes, aromatic polyester polyurethanes, aliphatic polyester polyurethanes, aromatic polycaprolactam polyurethanes, and aliphatic polycaprolactam polyurethanes; wherein the total resin solids is from 1 to 35
20 wt.% based on the total weight of the ink recordable substrate coating composition and the viscosity of the ink recordable substrate coating composition is less than 500 cps.

25 13. The ink recordable substrate coating composition of claim 12 wherein the aqueous solution of a polymeric nitrogen containing dye fixative compound comprises a polymer comprising monomer residues derived from one or more nitrogen containing monomers selected from the group consisting of:



- 5 wherein R^1 is selected independently for each occurrence in each structure from the group consisting of H and C_1 to C_3 aliphatic; R^2 is independently for each structure a divalent linking group selected from the group consisting of C_2 to C_{20} aliphatic hydrocarbon, polyethylene glycol and polypropylene glycol; R^3 is independently for each occurrence in each
- 10 structure selected from the group consisting of H, C_1 to C_{22} aliphatic hydrocarbon and a residue from the reaction of the nitrogen with epichlorohydrin; Z is selected from the group consisting of $-\text{O}-$ and $-\text{NR}^4-$, where R^4 is selected from the

group consisting of H and CH₃; and X is selected from the group consisting of halides and methylsulfate.

14. The ink recordable substrate coating composition of
5 claim 12 wherein the aqueous anionic polyurethane dispersion
is present at from 10 to 70 percent by weight of the ink
recordable substrate coating composition and the aqueous
solution of a nitrogen containing polymeric dye fixative
compound is present at from 30 to 90 percent by weight of the
10 ink recordable substrate coating composition.

15. The ink recordable substrate coating composition of
claim 13 wherein the nitrogen containing monomer is one or
more selected from the group consisting of dimethyl aminoethyl
15 (meth)acrylate, (meth)acryloyloxyethyl trimethyl ammonium
halides, (meth)acryloyloxyethyl trimethyl ammonium
methylsulfate, dimethyl aminopropyl (meth)acrylamide,
(meth)acrylamidopropyl trimethyl ammonium
halides, (meth)acrylamidopropyl trimethyl ammonium
20 methylsulfate, aminoalkyl (meth)acrylamides where the amine is
reacted with epichlorohydrin, diallyl amine, methyl diallyl
amine, and diallyl dimethyl ammonium halides.

16. The ink recordable substrate coating composition of
25 claim 12 wherein the nitrogen containing polymeric dye
fixative compound is a polyamide amine reacted with
epichlorohydrin.

17. The ink recordable substrate coating composition of
30 claim 12 wherein the anionic polyurethane is one or more
selected from the group consisting of aromatic polyether
polyurethanes, aliphatic polyether polyurethanes, aromatic
polyester polyurethanes, and aliphatic polyester
polyurethanes.

18. A method of coating an ink recordable substrate comprising:

(a) providing an ink recordable substrate having a top surface and a bottom surface;

5 (b) providing a coating composition having a pH less than 7 comprising:

(i) an aqueous polyurethane dispersion; and

(ii) an aqueous solution of a nitrogen containing polymeric dye fixative compound;

10 (c) applying the coating composition to at least one side of the ink recordable substrate.

19. The method of claim 18 wherein the ink recordable substrate comprises a microporous substrate having a top
15 surface and a bottom surface and comprising:

(a) a matrix comprising a polyolefin;

(b) a finely divided particulate siliceous filler distributed throughout the matrix; and

(c) a network of interconnecting pores
20 communicating throughout the microporous substrate, said pores constituting at least about 35 percent by volume of said microporous substrate.

20. The method of claim 19 wherein the polyolefin
25 comprises one or both selected from the group consisting of a linear high molecular weight polyethylene having an intrinsic viscosity of at least 10 deciliters/gram and a linear high molecular weight polypropylene having an intrinsic viscosity of at least 5 deciliters/gram.

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21. The method of claim 19 wherein the siliceous filler constitutes from 50 percent to 90 percent by weight of the microporous substrate.

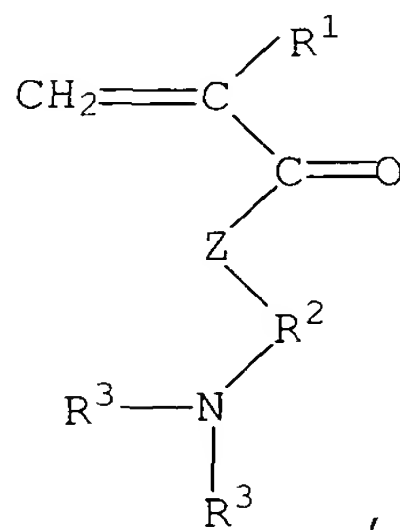
22. The method of claim 18 wherein the ink recordable substrate has a porosity of not more than 20,000 seconds/100cc air.

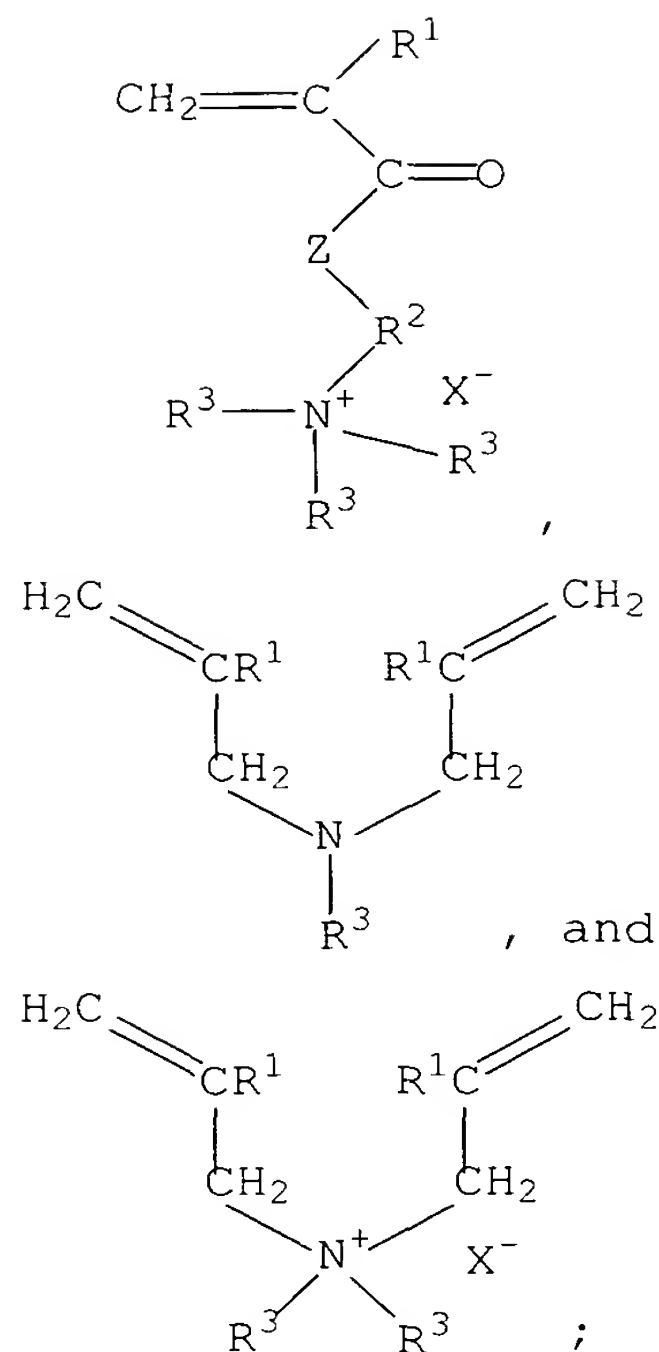
5 23. The method of claim 18 wherein the polyurethane in (b)(i) is selected from the group consisting of anionic polyurethanes, cationic polyurethanes, nonionic polyurethanes, and mixtures thereof.

10 24. The method of claim 23 wherein the aqueous anionic polyurethane dispersion comprises one or more anionic polyurethanes selected from the group consisting of aromatic polyether polyurethanes, aliphatic polyether polyurethanes, aromatic polyester polyurethanes, aliphatic polyester
15 polyurethanes, aromatic polycaprolactam polyurethanes, and aliphatic polycaprolactam polyurethanes.

25. The method of claim 23 wherein the aqueous anionic polyurethane has one or more acid groups selected from the
20 group consisting of carboxylic acid, sulfonic acid and mixtures thereof.

26. The method of claim 18 wherein the aqueous solution of a nitrogen containing polymeric dye fixative compound
25 comprises a polymer comprising monomer residues derived from one or more nitrogen containing monomers selected from the group consisting of:





wherein R^1 is selected independently for each occurrence in
 5 each structure from the group consisting of H and C_1 to C_3
 aliphatic; R^2 is independently for each structure a divalent
 linking group selected from the group consisting of C_2 to C_{20}
 aliphatic hydrocarbon, polyethylene glycol and polypropylene
 glycol; R^3 is independently for each occurrence in each
 10 structure selected from the group consisting of H, C_1 to C_{22}
 aliphatic hydrocarbon and a residue from the reaction of the
 nitrogen with epichlorohydrin; Z is selected from the group
 consisting of -O- and - NR^4 -, where R^4 is selected from the
 group consisting of H and CH_3 ; and X is selected from the group
 15 consisting of halides and methylsulfate.

27. The method of claim 18 wherein the aqueous
 polyurethane dispersion is present at from 10 to 70 percent by
 weight of the ink recordable substrate coating composition and
 20 the aqueous solution of a nitrogen containing polymeric dye

fixative compound is present at from 30 to 90 percent by weight of the coating composition.

28. The method of claim 26 wherein the nitrogen
5 containing monomer is one or more selected from the group
consisting of dimethyl aminoethyl (meth)acrylate,
(meth)acryloyloxyethyl trimethyl ammonium halides,
(meth)acryloyloxyethyl trimethyl ammonium methylsulfate,
dimethyl aminopropyl (meth)acrylamide, (meth)acrylamidopropyl
10 trimethyl ammonium halides, (meth)acrylamidopropyl trimethyl
ammonium methylsulfate, aminoalkyl (meth)acrylamides where the
amine is reacted with epichlorohydrin, diallyl amine, methyl
diallyl amine, and diallyl dimethyl ammonium halides.

15 29. The method of claim 18 wherein the nitrogen
containing polymeric dye fixative compound is a polyamide
amine reacted with epichlorohydrin.

30. The method of claim 24 wherein the anionic
20 polyurethane is one or more selected from the group consisting
of aromatic polyether polyurethanes, aliphatic polyether
polyurethanes, aromatic polyester polyurethanes, and aliphatic
polyester polyurethanes.

25 31. The method of claim 18 wherein the total resin
solids is from 1 to 35 wt.% based on the total weight of the
coating composition.

32. The method of claim 18 wherein the viscosity of the
30 coating composition is less than 500 cps.

33. The method of claim 18 wherein the polyurethane
(b)(i) is an anionic polyurethane and the coating composition
is prepared by mixing the nitrogen containing polymeric dye

fixative compound (b)(ii) into the aqueous polyurethane dispersion (b)(i).

34. The method of claim 18 wherein the coating
5 composition is applied to both sides of the ink recordable substrate.

35. The method of claim 18 wherein the application of the coating composition comprises:

10 (a) applying the coating composition to the ink recordable substrate using a method selected from the group consisting of flexography, spraying, air knife coating, curtain coating, dipping, rod coating, blade coating, gravure, reverse roll, roller application, imbibing, size press,
15 printing, brushing, drawing, slot-die coating, and extrusion; and

(b) drying the coated ink recordable substrate by applying a temperature from ambient to 350°F.

20 36. A coated ink recordable substrate coated using the method of claim 18.

37. A method of coating a microporous substrate comprising:

25 (a) providing a microporous substrate having an upper surface and a lower surface comprising:

(i) a matrix comprising a polyolefin;
(ii) a finely divided particulate siliceous filler distributed throughout the matrix; and

30 (iii) a network of interconnecting pores communicating throughout the microporous substrate, said pores constituting at least about 35 percent by volume of said microporous substrate;

(b) providing a coating composition having a pH
35 less than 7 comprising the product formed by adding,

(i) an aqueous solution of a polymeric nitrogen containing dye fixative compound to,

(ii) an aqueous anionic polyurethane dispersion comprising one or more anionic polyurethanes
5 selected from the group consisting of aromatic polyether polyurethanes, aliphatic polyether polyurethanes, aromatic polyester polyurethanes, aliphatic polyester polyurethanes, aromatic polycaprolactam polyurethanes, and aliphatic polycaprolactam polyurethanes; wherein the total resin solids
10 is from 1 to 35 wt.% based on the total weight of the coating composition and the viscosity of the coating composition is less than 500 cps; and

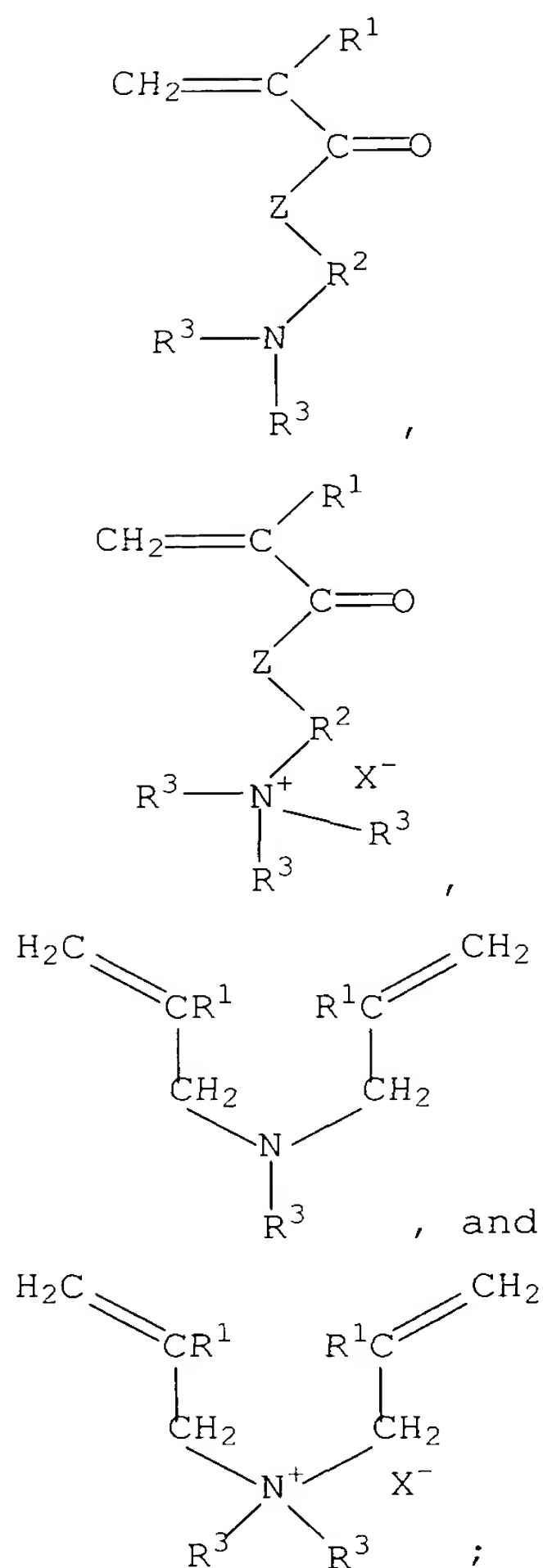
(c) applying the coating composition to at least one surface of the microporous substrate by,

15 (i) applying the coating composition to the microporous substrate using a method selected from the group consisting of flexography, spraying, air knife coating, curtain coating, dipping, rod coating, blade coating, gravure, reverse roll, roller application, imbibing, size press,
20 printing, brushing, drawing, slot-die coating, and extrusion; and

(ii) drying the coated ink recordable substrate by applying a temperature from ambient to 350°F.

25 38. The method of claim 37 wherein the aqueous anionic polyurethane has one or more acid groups selected from the group consisting of carboxylic acid, sulfonic acid and mixtures thereof.

30 39. The method of claim 37 wherein the aqueous solution of a polymeric nitrogen containing dye fixative compound comprises a polymer comprising monomer residues derived from one or more nitrogen containing monomers selected from the group consisting of:



- 5 wherein R^1 is selected independently for each occurrence in each structure from the group consisting of H and C_1 to C_3 aliphatic; R^2 is independently for each structure a divalent linking group selected from the group consisting of C_2 to C_{20} aliphatic hydrocarbon, polyethylene glycol and polypropylene
- 10 glycol; R^3 is independently for each occurrence in each structure selected from the group consisting of H, C_1 to C_{22} aliphatic hydrocarbon and a residue from the reaction of the nitrogen with epichlorohydrin; Z is selected from the group consisting of $-\text{O}-$ and $-\text{NR}^4-$, where R^4 is selected from the

group consisting of H and CH₃; and X is selected from the group consisting of halides and methylsulfate.

40. The method of claim 37 wherein the aqueous anionic
5 polyurethane dispersion is present at from 10 to 70 percent by weight of the coating composition and the aqueous solution of a nitrogen containing polymeric dye fixative compound is present at from 30 to 90 percent by weight of the coating composition.

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41. The method of claim 39 wherein the nitrogen
containing monomer is one or more selected from the group consisting of dimethyl aminoethyl (meth)acrylate,
(meth)acryloyloxyethyl trimethyl ammonium halides,
15 (meth)acryloyloxyethyl trimethyl ammonium methylsulfate,
dimethyl aminopropyl (meth)acrylamide, (meth)acrylamidopropyl trimethyl ammonium halides, (meth)acrylamidopropyl trimethyl ammonium methylsulfate, aminoalkyl (meth)acrylamides where the amine is reacted with epichlorohydrin, diallyl amine, methyl
20 diallyl amine, and diallyl dimethyl ammonium halides.

42. The method of claim 37 wherein the nitrogen
containing polymeric dye fixative compound is a polyamide amine reacted with epichlorohydrin.

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43. The method of claim 37 wherein the anionic
polyurethane is one or more selected from the group consisting of aromatic polyether polyurethanes, aliphatic polyether polyurethanes, aromatic polyester polyurethanes, and aliphatic
30 polyester polyurethanes.

44. The method of claim 37 wherein the polyolefin
comprises one or both selected from the group consisting of a linear high molecular weight polyethylene having an intrinsic
35 viscosity of at least about 10 deciliters/gram and a linear

high molecular weight polypropylene having an intrinsic viscosity of at least about 5 deciliters/gram.

45. The method of claim 37 wherein the siliceous filler
5 constitutes from 50 percent to 90 percent by weight of the microporous substrate.

46. The method of claim 37 wherein the microporous
substrate has a porosity of not more than 20,000 seconds/100cc
10 air.

47. A coated microporous substrate coated using the method of claim 37.

15 48. A method of coating a microporous substrate comprising:

(a) providing a microporous substrate having
having an upper surface and a lower surface comprising:

(i) a matrix comprising a polyolefin;
20 (ii) a finely divided particulate siliceous filler distributed throughout the matrix; and
(iv) a network of interconnecting pores communicating throughout the microporous substrate, said pores constituting at least about 35 percent by volume of said
25 microporous substrate;

(b) providing a coating composition having a pH less than 7 comprising the product formed by adding,

(i) an aqueous solution of a polymeric nitrogen containing dye fixative compound to,

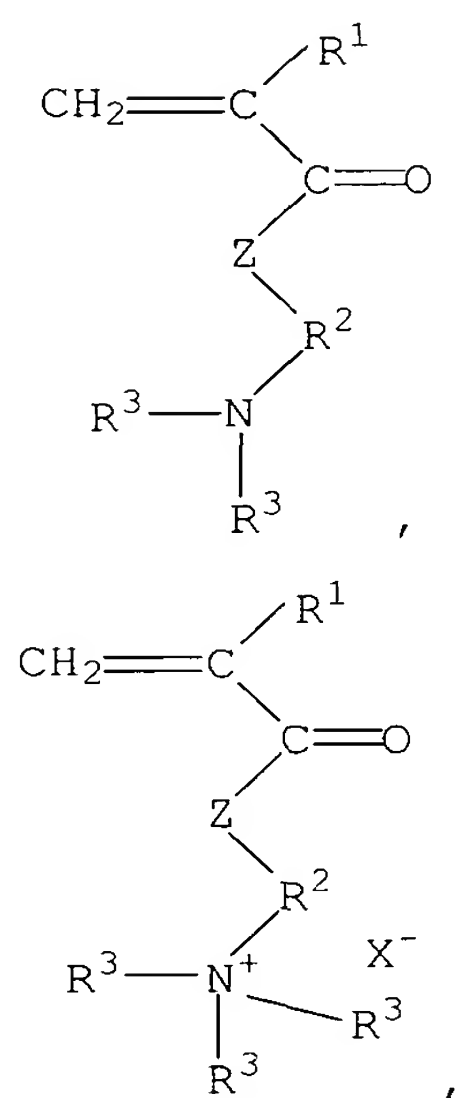
30 (ii) an aqueous cationic polyurethane dispersion; wherein the total resin solids is from 1 to 35 wt.% based on the total weight of the coating composition and the viscosity of the coating composition is less than 500 cps; and

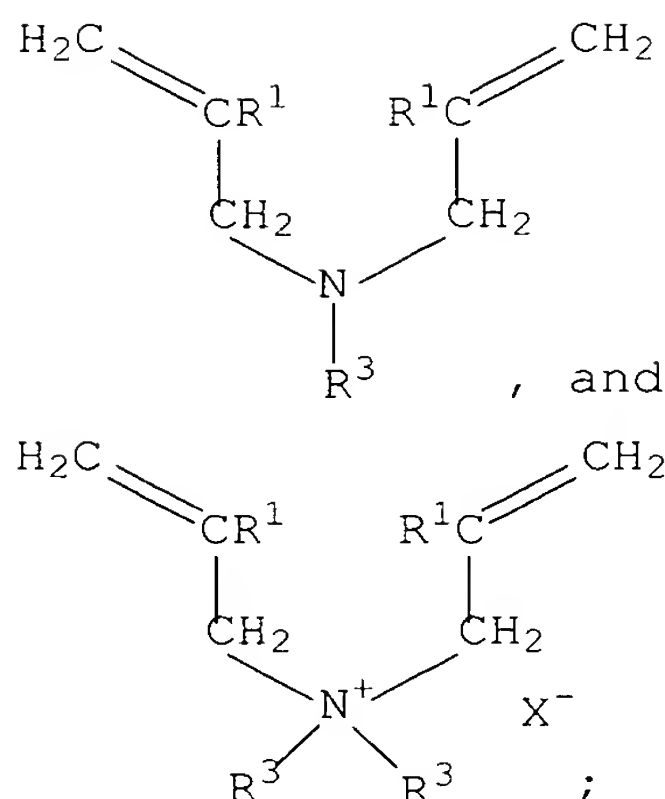
(c) applying the coating composition to at least one side of the microporous substrate by,

(i) applying the coating composition to the microporous substrate using a method selected from the group consisting of flexography, spraying, air knife coating, curtain coating, dipping, rod coating, blade coating, gravure, reverse roll, roller application, imbibing, size press, printing, brushing, drawing, slot-die coating, and extrusion; and

(ii) drying the coated ink recordable substrate by applying a temperature from ambient to 350°F.

49. The method of claim 48 wherein the aqueous solution of a polymeric nitrogen containing dye fixative compound comprises a polymer comprising monomer residues derived from one or more nitrogen containing monomers selected from the group consisting of:





wherein R^1 is selected independently for each occurrence in each structure from the group consisting of H and C_1 to C_3 aliphatic; R^2 is independently for each structure a divalent linking group selected from the group consisting of C_2 to C_{20} aliphatic hydrocarbon, polyethylene glycol and polypropylene glycol; R^3 is independently for each occurrence in each structure selected from the group consisting of H, C_1 to C_{22} aliphatic hydrocarbon and a residue from the reaction of the nitrogen with epichlorohydrin; Z is selected from the group consisting of $-\text{O}-$ and $-\text{NR}^4-$, where R^4 is selected from the group consisting of H and CH_3 ; and X is selected from the group consisting of halides and methylsulfate.

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50. The method of claim 48 wherein the aqueous cationic polyurethane dispersion is present at from 10 to 70 percent by weight of the coating composition and the aqueous solution of a nitrogen containing polymeric dye fixative compound is present at from 30 to 90 percent by weight of the coating composition.

51. The method of claim 49 wherein the nitrogen containing monomer is one or more selected from the group consisting of dimethyl aminoethyl (meth)acrylate, (meth)acryloyloxyethyl trimethyl ammonium halides, (meth)acryloyloxyethyl trimethyl ammonium methylsulfate,

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dimethyl aminopropyl (meth)acrylamide, (meth)acrylamidopropyl
trimethyl ammonium halides, (meth)acrylamidopropyl trimethyl
ammonium methylsulfate, aminoalkyl (meth)acrylamides where the
amine is reacted with epichlorohydrin, diallyl amine, methyl
5 diallyl amine, and diallyl dimethyl ammonium halides.

52. The method of claim 48 wherein the nitrogen
containing polymeric dye fixative compound is a polyamide
amine reacted with epichlorohydrin.

10

53. The method of claim 48 wherein the polyolefin
comprises one or both selected from the group consisting of a
linear high molecular weight polyethylene having an intrinsic
viscosity of at least about 10 deciliters/gram and a linear
15 high molecular weight polypropylene having an intrinsic
viscosity of at least about 5 deciliters/gram.

54. The method of claim 48 wherein the siliceous filler
constitutes from 50 percent to 90 percent by weight of the
20 microporous substrate.

55. The method of claim 48 wherein the microporous
substrate has a porosity of not more than 20,000 seconds/100cc
air.

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56. A coated microporous substrate coated using the
method of claim 48.

57. A coated microporous substrate comprising:

30 (a) a microporous substrate having an upper
surface and a lower surface comprising:

- (i) a matrix comprising a polyolefin;
- (ii) a finely divided particulate siliceous
filler distributed throughout the matrix; and

(iii) a network of interconnecting pores communicating throughout the microporous substrate, said pores constituting at least about 35 percent by volume of said microporous substrate; and

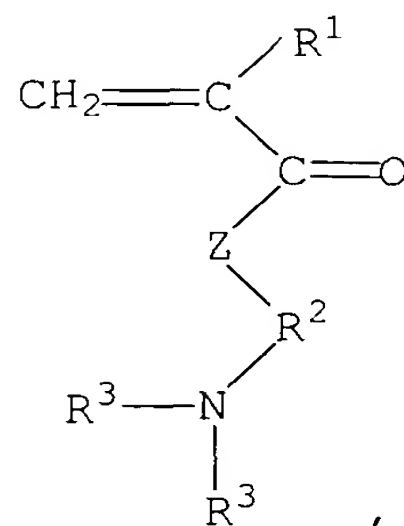
5 (b) a coating layer on at least one surface of the microporous substrate, said coating layer comprising:

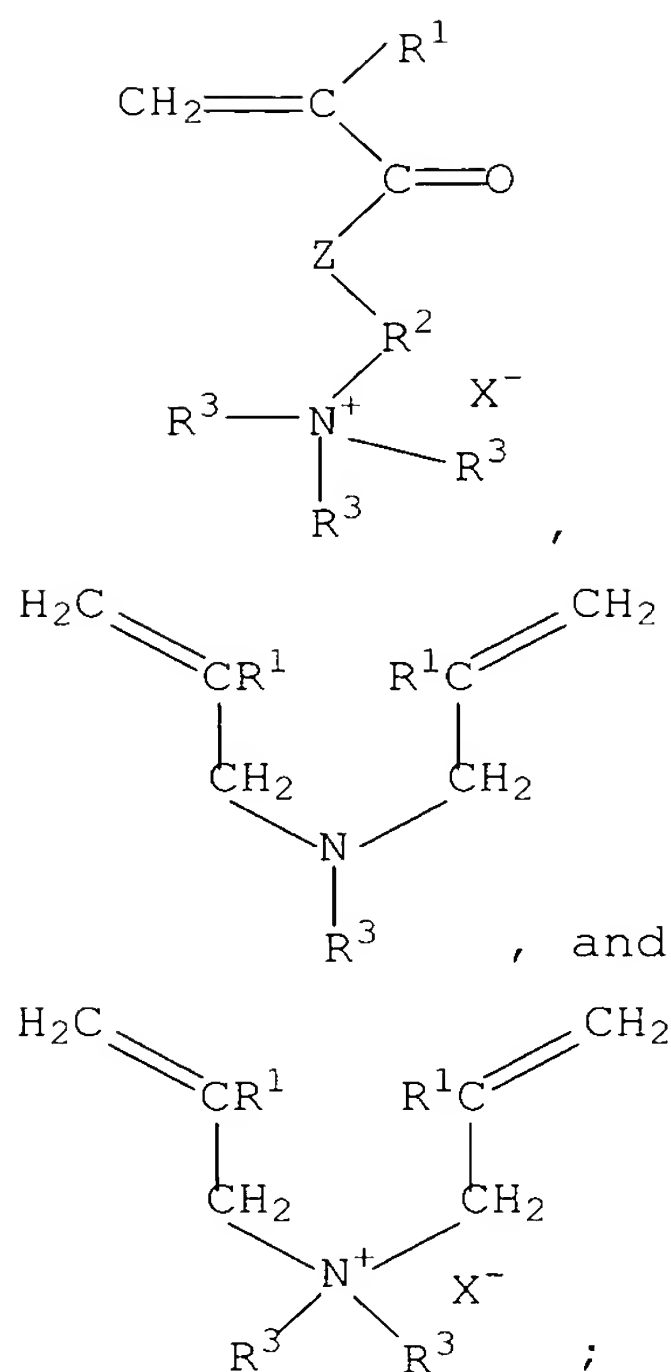
(i) a polymeric nitrogen containing dye fixative compound; and

10 (ii) one or more polyurethanes selected from the group consisting of anionic polyurethanes, cationic polyurethanes, nonionic polyurethanes, and mixtures thereof.

58. The coated microporous substrate of claim 57 wherein the polyurethane is an anionic polyurethane, and the aqueous
15 anionic polyurethane has one or more acid groups selected from the group consisting of carboxylic acid, sulfonic acid and mixtures thereof.

59. The coated microporous substrate of claim 57 wherein
20 the polymeric nitrogen containing dye fixative compound comprises a polymer comprising monomer residues derived from one or more nitrogen containing monomers selected from the group consisting of:





wherein R^1 is selected independently for each occurrence in
 5 each structure from the group consisting of H and C_1 to C_3
 aliphatic; R^2 is independently for each structure a divalent
 linking group selected from the group consisting of C_2 to C_{20}
 aliphatic hydrocarbon, polyethylene glycol and polypropylene
 glycol; R^3 is independently for each occurrence in each
 10 structure selected from the group consisting of H, C_1 to C_{22}
 aliphatic hydrocarbon and a residue from the reaction of the
 nitrogen with epichlorohydrin; Z is selected from the group
 consisting of -O- and - NR^4 -, where R^4 is selected from the
 group consisting of H and CH_3 ; and X is selected from the group
 15 consisting of halides and methylsulfate.

60. The coated microporous substrate of claim 57 wherein
 the polyurethane is present at from 10 to 70 percent by weight
 of the coating layer and the nitrogen containing polymeric dye
 20 fixative compound is present at from 30 to 90 percent by
 weight of the coating layer.

61. The coated microporous substrate of claim 59 wherein the nitrogen containing monomer is one or more selected from the group consisting of dimethyl aminoethyl (meth)acrylate, (meth)acryloyloxyethyl trimethyl ammonium halides, (meth)acryloyloxyethyl trimethyl ammonium methylsulfate, dimethyl aminopropyl (meth)acrylamide, (meth)acrylamidopropyl trimethyl ammonium halides, (meth)acrylamidopropyl trimethyl ammonium methylsulfate, aminoalkyl (meth)acrylamides where the amine is reacted with epichlorohydrin, diallyl amine, methyl diallyl amine, and diallyl dimethyl ammonium halides.

62. The coated microporous substrate of claim 57 wherein the nitrogen containing polymeric dye fixative compound is a polyamide amine reacted with epichlorohydrin.

63. The coated microporous substrate of claim 58 wherein the anionic polyurethane is one or more selected from the group consisting of aromatic polyether polyurethanes, aliphatic polyether polyurethanes, aromatic polyester polyurethanes, and aliphatic polyester polyurethanes.

64. The coated microporous substrate of claim 57 wherein the polyolefin comprises one or both selected from the group consisting of a linear high molecular weight polyethylene having an intrinsic viscosity of at least about 10 deciliters/gram and a linear high molecular weight polypropylene having an intrinsic viscosity of at least about 5 deciliters/gram.

65. The coated microporous substrate of claim 57 wherein the siliceous filler constitutes from 50 percent to 90 percent by weight of the microporous substrate.

66. The coated microporous substrate of claim 57 wherein the coating layer penetrates into at least the first 1 micron of the surface of the microporous substrate.

5 67. The coated microporous substrate of claim 57 wherein the microporous substrate has a thickness of from 0.5 to 100 mils.

68. The coated microporous substrate of claim 57 wherein
10 the coat weight is from 0.001 g/m² to 50 g/m².

69. The coated microporous substrate of claim 57 wherein the microporous substrate (a) has a porosity of not more than 20,000 seconds/100cc air.

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70. A multilayer article comprising an ink jet recordable substrate at least partially connected to a substantially nonporous material, said ink jet recordable substrate at least partially coated with a substantially
20 water-resistant coating composition, and at least one of said ink jet recordable substrate and substantially nonporous material at least partially coated with a friction-reducing coating composition.

25 71. The multilayer article of claim 70 wherein said substantially water-resistant coating composition comprises:
 (a) an aqueous polyurethane dispersion; and
 (b) a cationic nitrogen-containing polymeric dye fixative material at least partially dissolved in an aqueous
30 medium.

72. The multilayer article of claim 70 wherein said friction-reducing coating composition comprises a lubricant and a resin.

73. The multilayer article of claim 72 wherein said lubricant comprises polysiloxane.

5 74. The multilayer article of claim 72 wherein said resin comprises styrene acrylic polymer.

75. A method for producing a multilayer article comprising the steps of:

10 (a) providing a ink jet recordable substrate having a top surface and a bottom surface;

 (b) providing a substantially water-resistant coating composition comprising a stable dispersion of:

 (i) an aqueous polyurethane dispersion; and
15 (ii) a cationic nitrogen-containing polymeric dye fixative material at least partially dissolved in an aqueous medium;

 (c) at least partially applying said coating composition to at least one surface of said ink jet recordable
20 substrate;

 (d) at least partially connecting said ink jet recordable substrate of (c) to a substantially nonporous material having a top surface and a bottom surface;

 (e) providing a friction-reducing coating
25 composition; and

 (f) at least partially applying said friction-reducing coating composition to at least one surface of at least one of said ink jet recordable substrate and said substantially
30 nonporous material.

76. A multilayer article comprising an ink jet recordable substrate, at least one substantially nonporous material and a magnetizable material.

77. The multilayer article of claim 76 wherein said magnetizable material is an oxide material.
78. The multilayer article of claim 77 wherein said oxide material is selected from ferrous oxide,
5 iron oxide, and mixtures thereof.
79. The multilayer article of claim 76 wherein said magnetizable material is in a slurry.
80. The multilayer article of claim 76 wherein said magnetizable material has a coercivity of from
10 200 to 5000.
81. The multilayer article of claim 76 wherein said magnetizable material is at least partially connected to at least one material selected from a protective material, a carrier material or an
15 adhesive material.
82. The multilayer article of claim 81 wherein said protective material is selected from polyethylene teraphthalate, polyester and combinations thereof.
- 20 83. The multilayer article of claim 81 wherein said carrier material is selected from polyethylene teraphthalate, polyester and combinations thereof.
84. The multilayer article of claim 81 wherein said
25 adhesive material is selected from polyvinyl acetate, starches, gums, polyvinyl alcohol, animal glues, acrylics, epoxies, polyethylene-containing adhesives, and rubber-containing adhesives.
- 30 85. The multilayer article of claim 81 wherein said protective material is at least partially connected to said magnetizable material, said magnetizable material is at least partially

connected to said carrier material, and said carrier material is at least partially connected to said adhesive material.

5 86. The multilayer article of claim 76 wherein said magnetizable material is at least partially connected to said ink jet recordable substrate.

10 87. The multilayer article of claim 76 wherein said magnetizable material is at least partially connected to said substantially nonporous material.

 88. The multilayer article of claim 76 wherein said ink jet recordable substrate is a microporous substrate.

15 89. The multilayer article of claim 76 wherein said substantially nonporous material is polyvinyl chloride.

20 90. The multilayer article of claim 76 wherein said magnetizable material is at least partially coated with a substantially water-resistant coating composition.

 91. The multilayer article of claim 90 wherein said substantially water-resistant coating composition is the coating composition of claim 1.

25 92. The multilayer article of claim 90 wherein at least one surface of said ink jet recordable substrate is at least partially coated with a substantially water-resistant coating composition.

30 93. The multilayer article of claim 90 wherein at least one surface of said substantially nonporous material is at least partially coated with a substantially water-resistant coating composition.

94. The multilayer article of claim 76 wherein at least one surface of said magnetizable material is at least partially coated with a friction reducing coating composition.
- 5 95. The multilayer article of claim 94 wherein said friction reducing coating composition further comprises at least one lubricant and at least one resin.
- 10 96. The multilayer article of claim 94 wherein said ink jet recordable substrate is at least partially coated with a friction reducing coating composition.
- 15 97. The multilayer article of claim 94 wherein said substantially nonporous material is at least partially coated with a friction reducing coating composition.
- 20 98. The multilayer article of claim 76 further comprising a release liner at least partially connected to at least one surface of said multilayer article.
- 25 99. A multilayer article comprising a microporous substrate at least partially connected to a first substantially nonporous material; said first substantially nonporous material at least partially connected to a second substantially nonporous material; said second substantially nonporous material at least partially connected to a third substantially nonporous material; said third substantially nonporous material comprising a magnetizable material.
- 30 100. A multilayer article comprising a magnetizable material at least partially connected to an adhesive material and said adhesive material at

least partially connected to a substantially nonporous material.

101. A multilayer article comprising a magnetizable material at least partially connected to an adhesive material and said adhesive material at least partially connected to an ink jet recordable material.

102. A multilayer article comprising a magnetizable material, an ink jet recordable substrate and a substantially nonporous material wherein said ink jet recordable substrate is at least partially coated with a substantially water-resistant coating composition, and at least one of said ink jet recordable substrate and substantially nonporous material is at least partially coated with a friction-reducing coating composition.

103. A multilayer article comprising an ink jet recordable substrate, at least one substantially nonporous material and a data transmittance/storage device.

104. The multilayer article of claim 103 wherein said data transmittance/storage device comprises a carrier material.

105. The multilayer article of claim 104 wherein said carrier material is polyvinylchloride.

106. The multilayer article of claim 103 wherein said data transmittance/storage device comprises a barrier material.

107. The multilayer article of claim 106 wherein said data transmittance/storage device can be at least partially connected to said barrier material using an adhesive material.

108. The multilayer article of claim 106 wherein at least one surface of said barrier material is at least partially coated with a coating composition selected from a substantially water-resistant coating composition, or a friction reducing coating composition or a combination thereof.

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109. The multilayer article of claim 106 wherein said barrier material comprises a substantially nonporous material.

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